REGIONAL AIR QUALITY COUNCIL

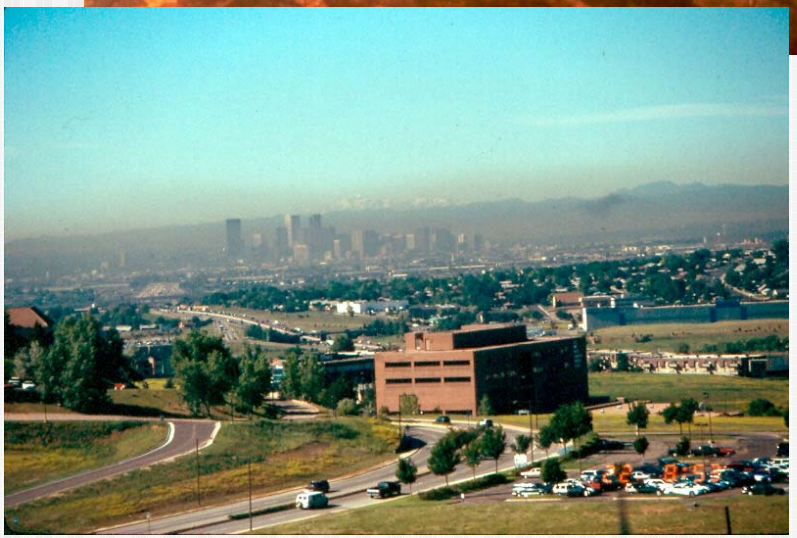
Air Quality in the Denver Area

Regional Air Quality Council

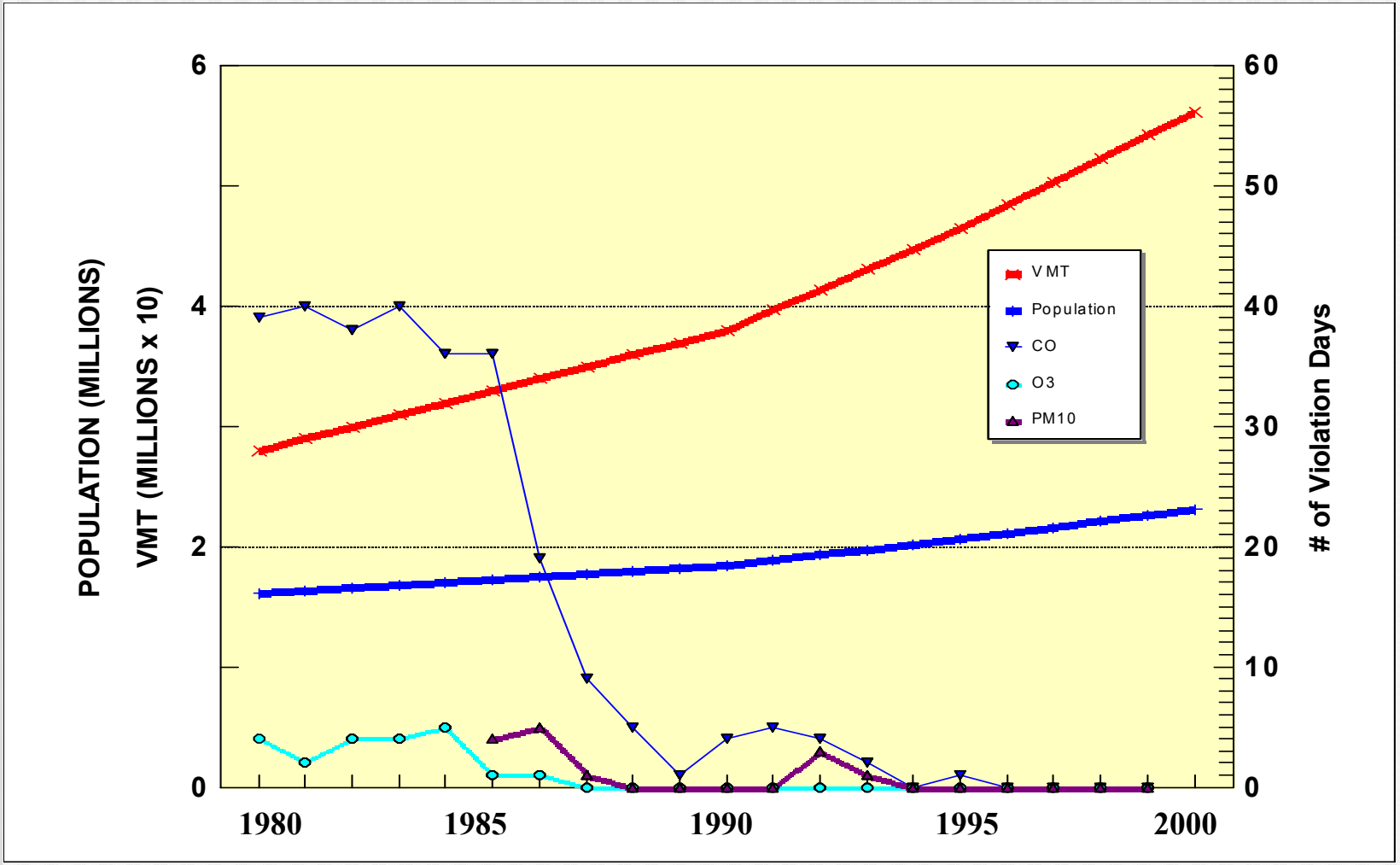
- Lead agency for air quality planning for Denver region
- Formed by Governor's Executive Order
- Public/private partnership
- Prepares plans required by Clean Air Act
- Develops programs to improve air quality in region
- Implements programs of public education and involvement
- Works closely with other agencies, local governments, and the private sector

Denver Air Quality History

- 1970's-early 1980's the Denver area exceed all EPA air quality standards nearly 200 days annually
- Denver area had the highest carbon monoxide levels in the country
- Infamous "Brown Cloud" hung over the city and made national magazine covers
- Denver rivaled Los Angeles for poor air quality



Air Quality Progress



Attainment Triple Crown

- **Ozone (1-hour standard)**
  - No violations since 1987
  - EPA approved attainment redesignation in Sept. 2001
- **Carbon Monoxide**
  - No violations since 1995
  - EPA approved attainment redesignation in Jan. 2002
- **PM-10**
  - No violations since 1993
  - EPA approved attainment redesignation in Sept. 2002
- **First area in country to achieve attainment redesignation for all pollutants**

Denver Brown Cloud

- Made up of fine particulate matter at levels below federal health standard
- Colorado established urban visibility standard in 1990 -- first in the nation
- Standard is essentially a goal of acceptable visual air quality
- Serves as the basis for bad air days in the winter
- CDPHE estimates poor visibility days have been reduced by nearly 30% since 1990

Blueprint For Clean Air

- Region's first comprehensive, long-range air quality plan
- Grew out of frustration with normal SIP process
- Looked at all pollutants over 20 years to 2020
- Coordinated look at air quality and transportation
- Significant public involvement
- Set the course for many short-term actions

Blueprint Recommendations

- Reduce power plant emissions
- Reduce emissions from diesel vehicles
- Reduce emissions from smoking and high-emitting vehicles
- Evaluate future of I/M and oxygenated gasoline programs
- Continue to reduce street sanding to offset growth

Blueprint Recommendations

- Work with DRCOG and local governments to implement Metro Vision and urban design measures
- Evaluate impact of new vehicle standards on long-term air quality
- Develop voluntary efforts to address new ozone standard
- Implement voluntary and incentive programs to reduce air pollution
- Develop maintenance plans and redesignation requests

Success Stories

- **Achieving attainment status for all standards**
  - CO was major accomplishment
- **Oxygenated gasoline**
  - First state to require use in l980's
  - Now phasing out usage
- **Woodburning restrictions**
  - Established state woodstove standards in 1980's
  - High Pollution Day restrictions
  - Changeout programs
- **Street sanding reductions**
  - Reduced use of street sand by over 60%
  - Led to dramatic reductions in PM-10

Success Stories

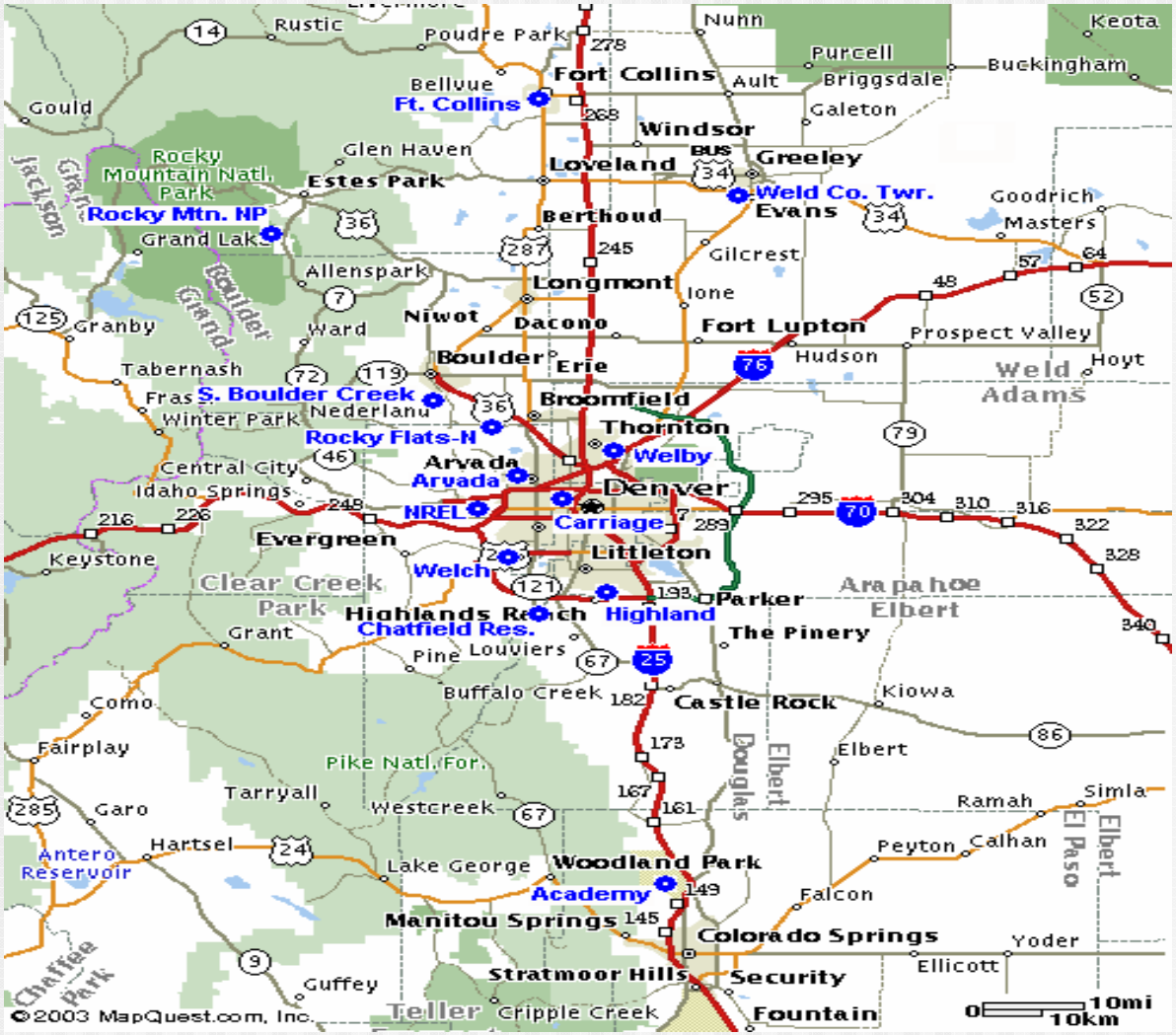
- **Power plant reductions**
  - Voluntary program initiated by Xcel Energy
  - Reduced SO2 emissions by 70%, NOx by 50%
- **School bus diesel retrofits**
  - Over 800 buses retrofitted
- **Transportation/air quality coordination**
  - Close working relationship with Denver Regional Council of Governments
  - Consistency between transportation and air quality planning
  - Metro Vision 2030
  - Passage of FasTracks transit funding
  - Encourage local design/land use practices

Future Challenges

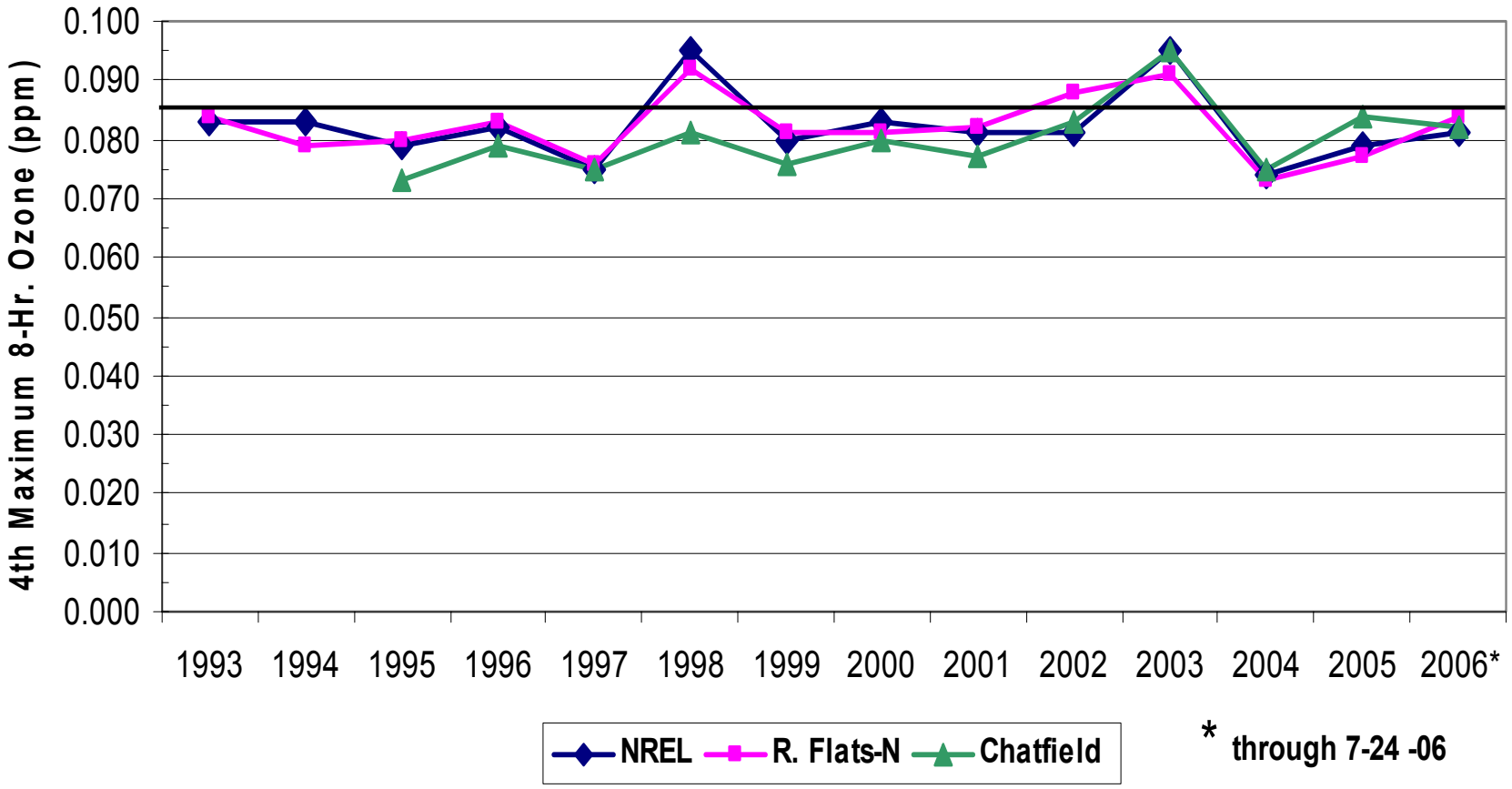
- **Maintaining 8-hour ozone standard**
- **Revised PM-2.5 standards**
- **New PM-coarse standard**
- **Continued improvement in Brown Cloud**
- **Impacts on Rocky Mountain National Park**
  - Ozone
  - Nitrogen deposition
- **Transportation conformity**
- **Oil and gas development**

REGIONAL AIR QUALITY COUNCIL

Ozone Monitoring Sites



8-Hour Ozone Trend



* through 7-24 -06

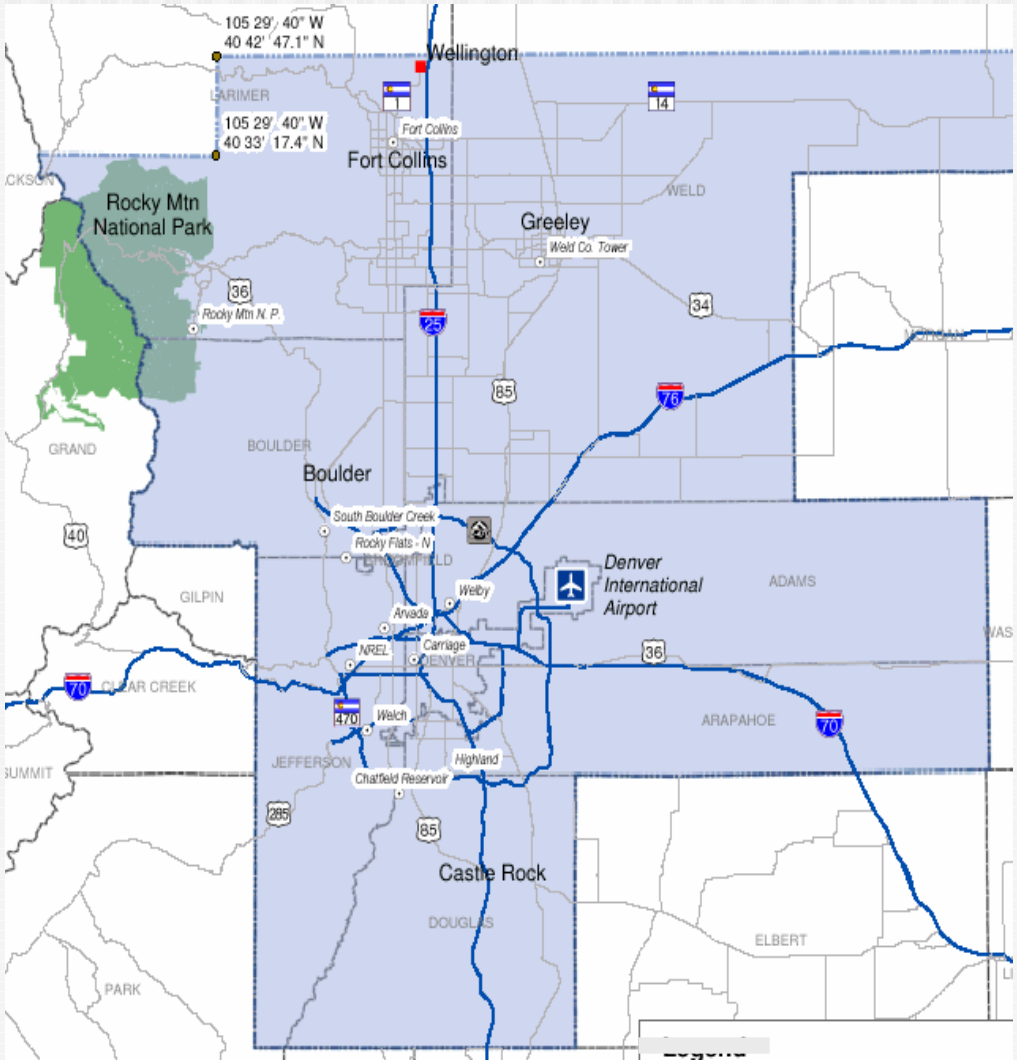
Voluntary Ozone Program

- **Began by the RAQC in cooperation with CDPHE in 1999**
- **Ozone alerts called on high ozone days**
- **Significant public education/awareness efforts, involving local governments**
- **New programs**
  - Voluntary gasoline volatility reduction
  - “Put a Cap on Ozone”
  - “Stop at the Click”
  - Mow Down Pollution”
  - “Repair Your Air” campaign
  - “Let’s Take Care of Our Summer Air” campaign
  - Collaboration with north Front Range communities

Early Action Compact

- State and regional agencies entered into a voluntary agreement with EPA to address ozone in Dec. 2002
- Region committed to developing an Ozone Action Plan earlier than would normally be required
- Region committed to meeting several planning/implementation milestones
- EPA agreed to defer any nonattainment designation and any resulting requirements, pending the area coming into attainment by 2007
- April 2004 Denver/NFR area designated as a nonattainment area, with effective date deferred

Ozone Area Boundary



Regional Air Quality Council

Benefits of EAC

- Achieves cleaner air sooner
- Preserves more local flexibility
- Avoids nonattainment designation
- Avoids additional, protracted planning requirements
- Avoids more stringent siting requirements for major sources
- Avoids more stringent transportation planning requirements and possible funding restrictions

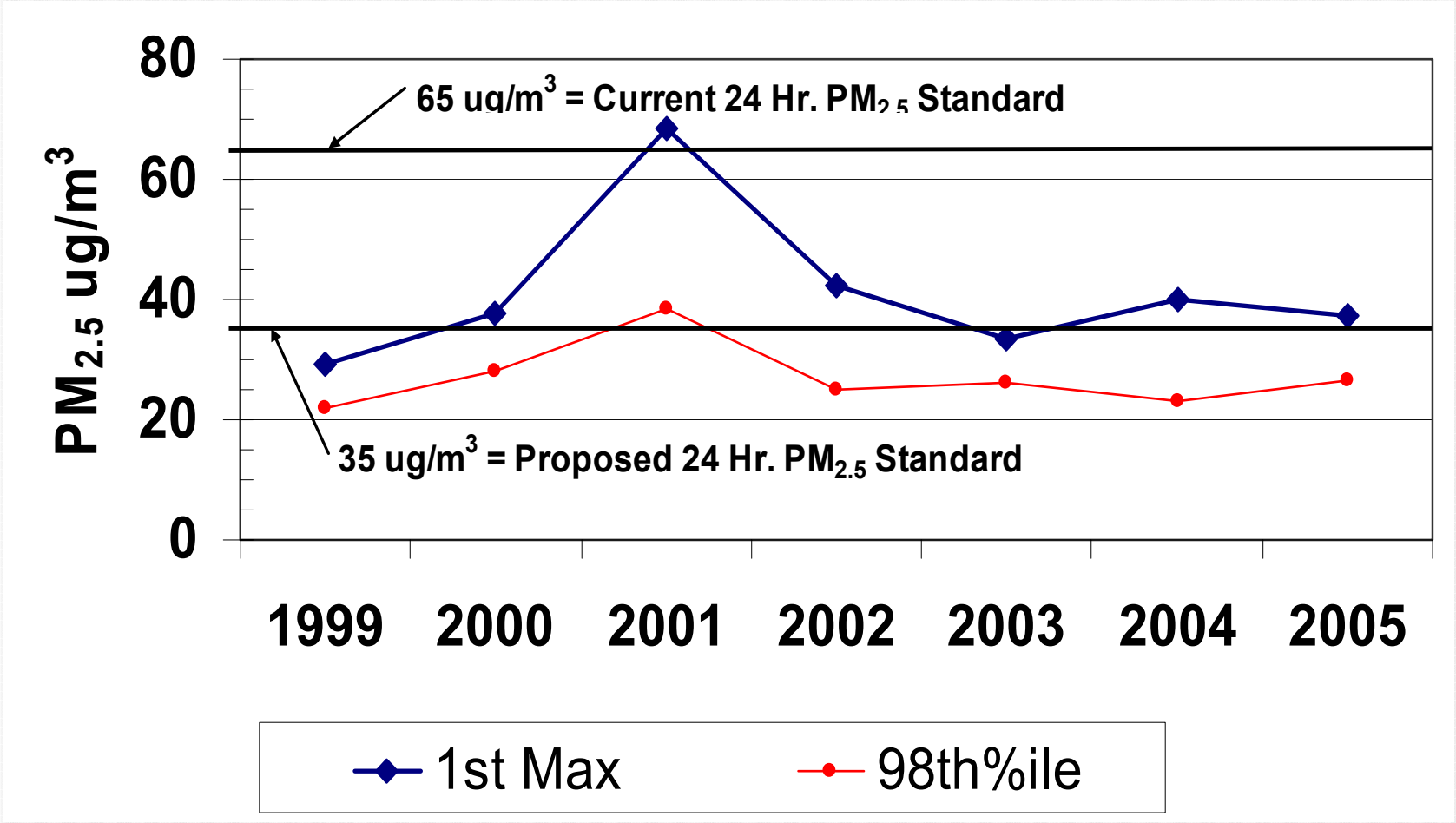
Ozone Action Plan

- **Adopted by AQCC in March 2004, approved by the General Assembly in May, submitted to EPA in July 2004**
- **EPA approved plan in August 2005**
- **Control measures**
  - Current federal/state programs
  - Reductions in gasoline volatility (RVP)
    - Plan recommended level of 8.1 psi
    - EPA subsequently established a level of 7.8 psi
  - Reductions in emissions from oil/gas industry
  - Public awareness program (not formal part of plan)
- **Combination of control measures expected to result in attainment by 2007**

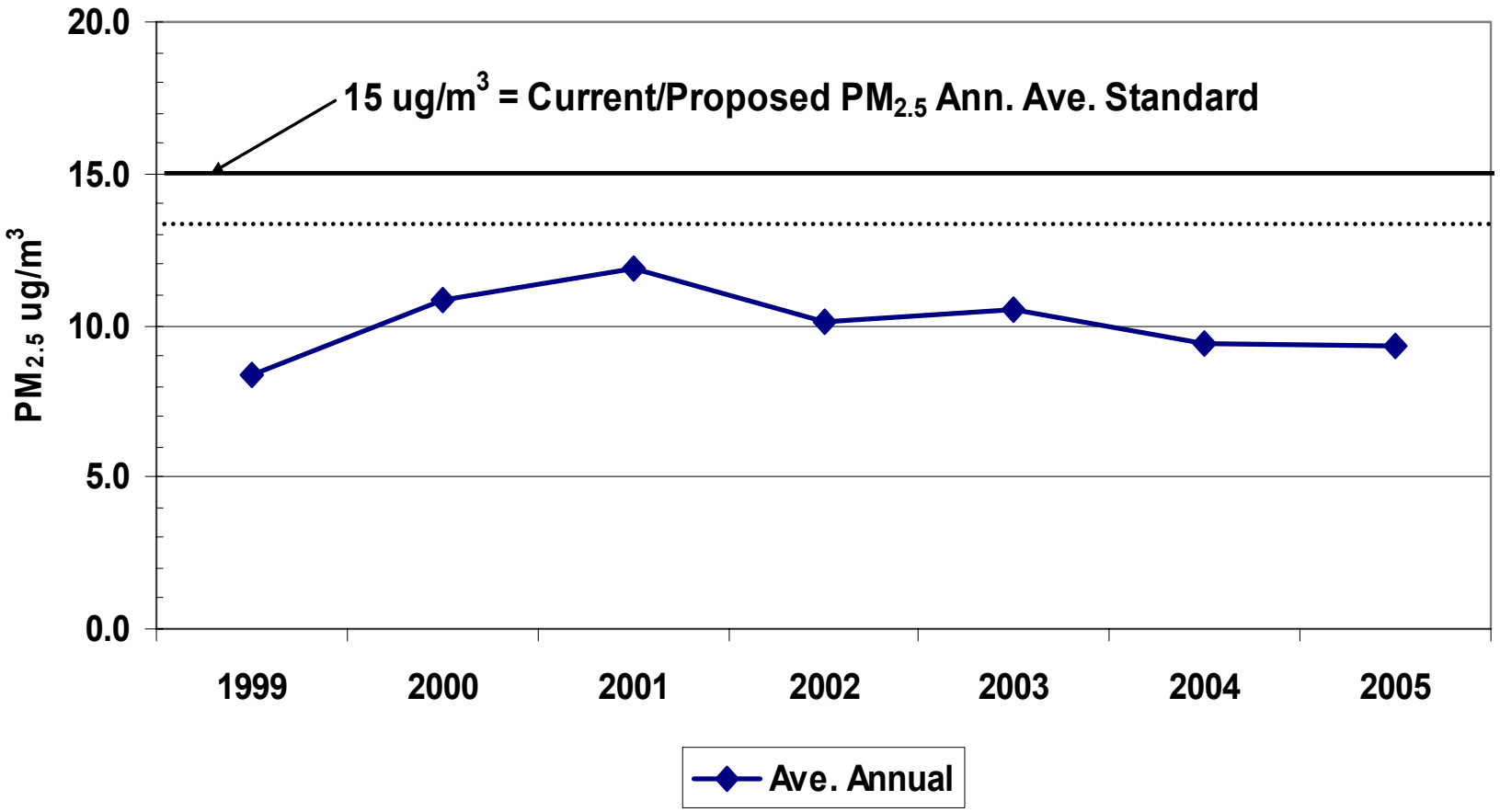
Ozone Status – 2006 (thru 7/31/06)

Monitor	2006			2006	2005	2004	2004-06	2007
	1st Max	2nd Max	3rd Max	4th Max	4th Max	4th Max	Ave.	Allow. 4th Max
Highland	13-Jul	22-Jul	29-Jul	19-Jul				
	85	82	82	81	80	72	77	93
Chatfield S.P.	13-Jul	29-Jul	22-Jul	27-Jul				
	92	88	86	86	84	75	81	84
NREL	29-Jul	22-Jul	28-Jul	23-Jul				
	94	89	84	83	79	74	78	92
Rocky Flats	19-Jun	29-Jul	14-Jul	15-Jul				
	94	93	91	90	77	73	80	87
So. Bld Ck	19-Jun	14-Jul	15-Jul	29-Jul				
	87	86	86	82	76	68	75	96
Fort Collins W.	14-Jul	29-Jul	13-Jun	19-Jun				
	97	95	88	87	--	--	--	--
RMNP*	14-Jul	25-May	12-Jun	27-Jun				
	91	76	76	74	75	73	74	105

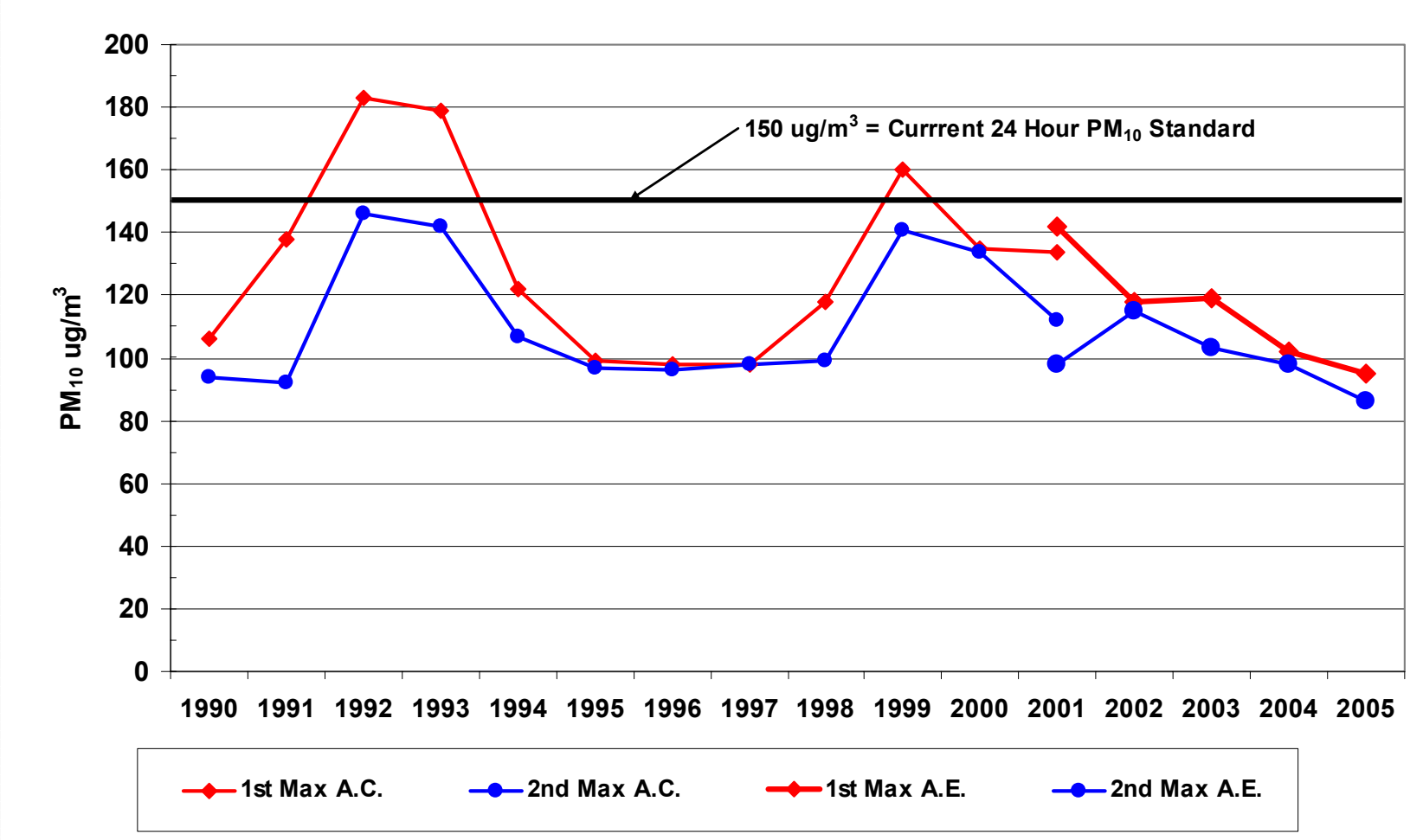
PM-2.5 Trends (24-hr. standard)



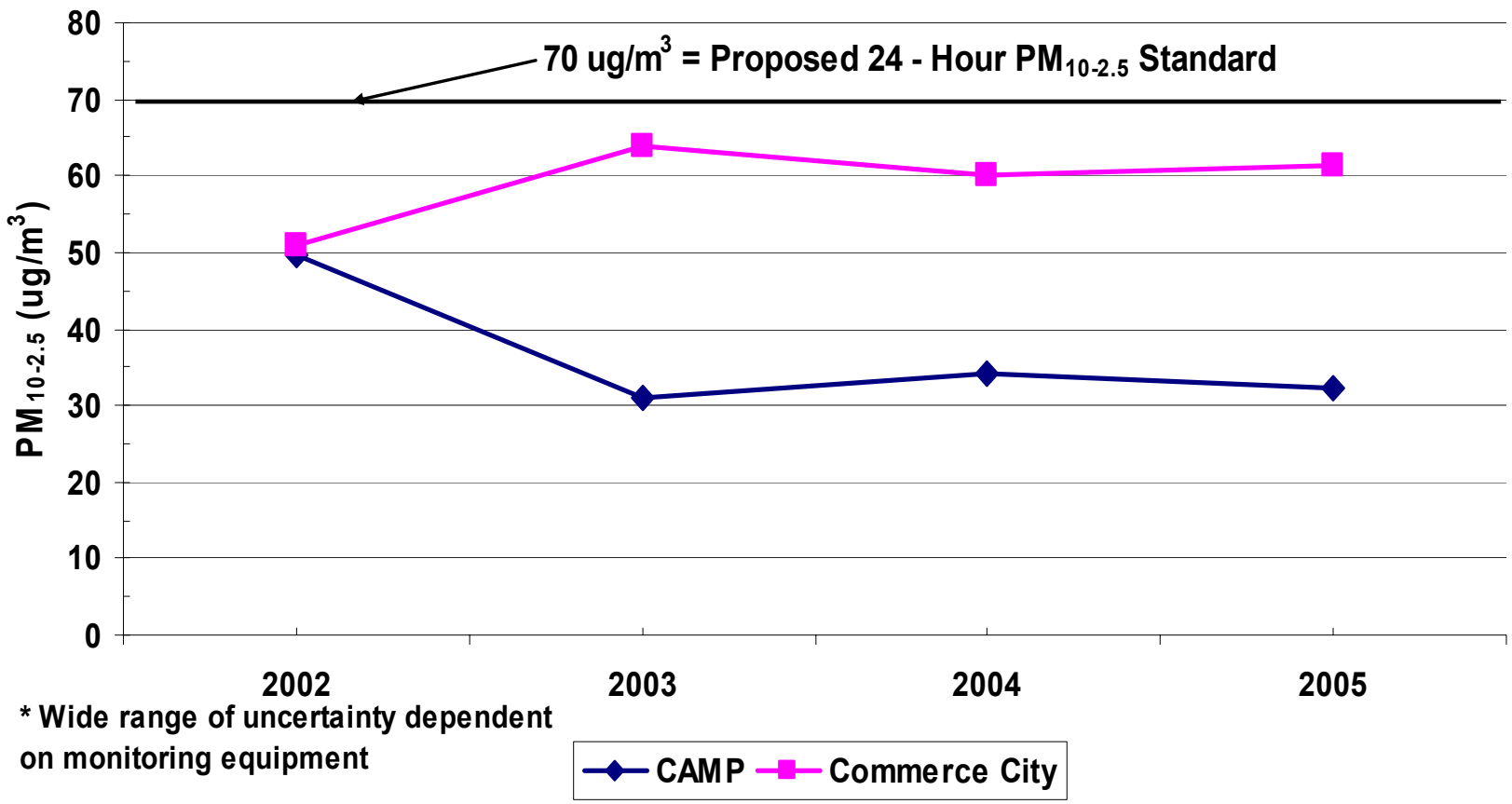
PM-2.5 Trends (annual standard)



PM-10 Trends


200
180
160
140
120
100
80
60
40
20
0
PM10 ug/m3
150 ug/m3 = Currrent 24 Hour PM10 Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
1st Max A.C.
2nd Max A.C.
1st Max A.E.
2nd Max A.E.

PM-coarse Standard



* Wide range of uncertainty dependent on monitoring equipment

Diesel Retrofit Program

- **Retrofitted over 800 school buses in 15 Front Range school districts**
  - Diesel oxidation catalysts
  - Engine preheat systems
  - Biodiesel fuel
  - Combination of EPA and CMAQ funding ($1.4 million)
- **Retrofits with Denver and private fleets**
- **Off-road equipment retrofit pilot project**
- **In 2007/08, will retrofit an additional 1500 school buses and municipal trucks with a $2.6 million CMAQ grant**

Repair Your Air Campaign

- Uses remote sensing technology to identify high-emitting vehicles
- Combined with region's RapidScreen clean screen program
- Will pay up to $1,000 for emission-related repairs
- Before and after IM240 testing
- Will lead to development of a high-emitter program to replace the region's current I/M program